

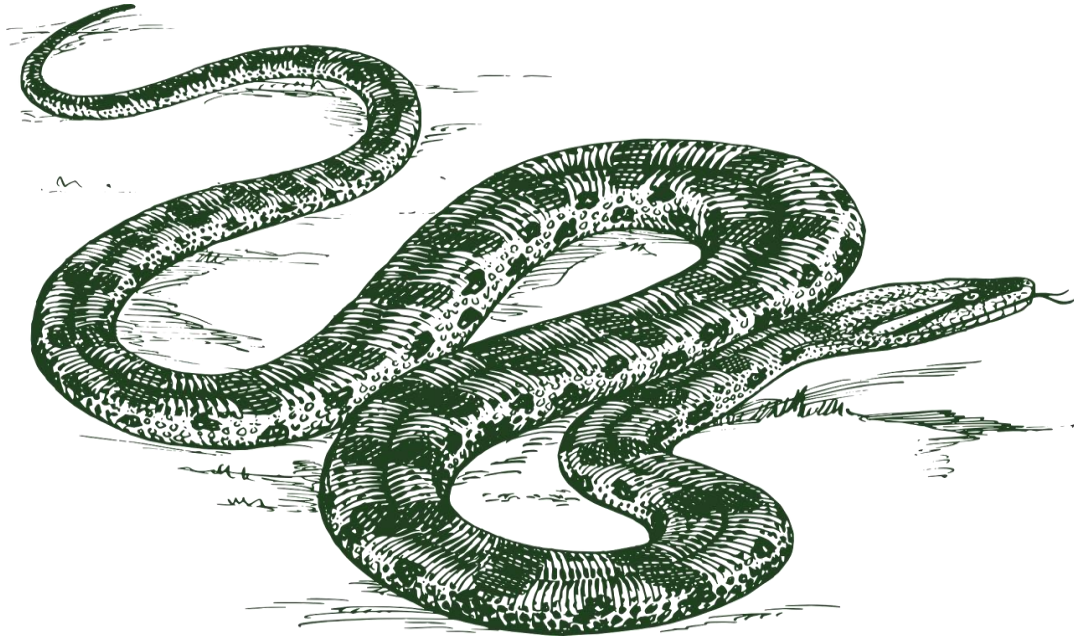


# Get Ready for **DATA SCIENCE**

Chap #2

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# contents



**1** 왜 Python이어야 하나?

**2** 주요 도구 알아보기

**3** 언어를 배우는 마음가짐

왜 Python이어야 하는가?

# 프로그래밍 언어란?










사람과 사람사이에 대화는 언어를 통해서 한다.

컴퓨터와 대화하려면 컴퓨터 언어가 필요하다.

그게 프로그래밍 언어라고 한다.

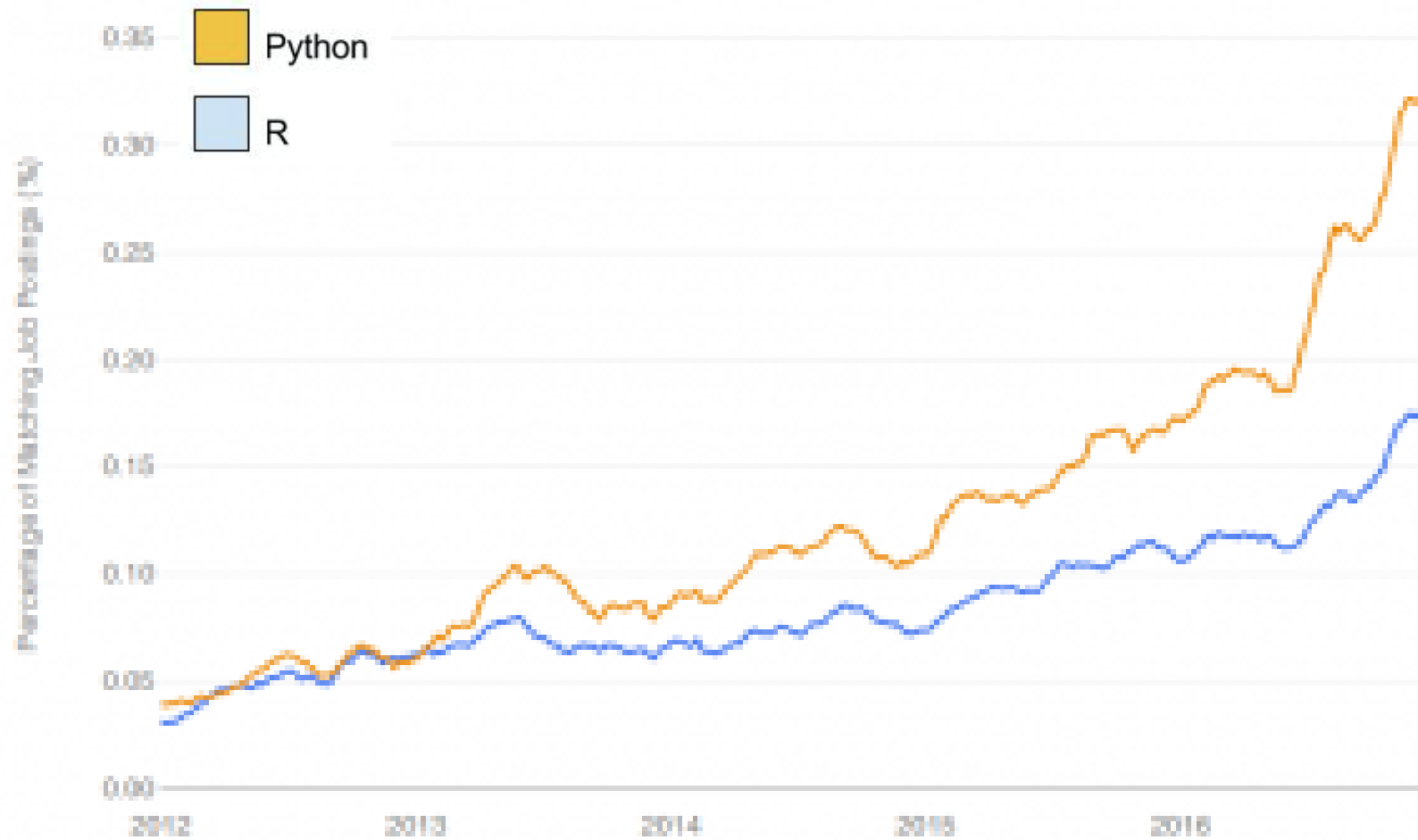


# 컴퓨터 언어는 다양하다

<p><b>Python</b> <i>The Ent</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Help little Hobbits (beginners) to understand programming concepts</p> <p>Help Wizards (computer scientists) to conduct researches</p> <p>Widely regarded as the best programming language for beginners</p> <p>Easiest to learn</p> <p>Widely used in scientific, technical &amp; academic field, i.e. Artificial Intelligence</p> <p>You can build website using Django, a popular Python web framework</p> <p>POPULARITY ★★★★★ USED TO BUILD YouTube, Instagram, Spotify</p> <p>AVG. SALARY \$107,000</p>	<p><b>Java</b> <i>Gandalf</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Wants peace &amp; works with everyone (portable)</p> <p>Very popular on all platforms, OS, and devices due to its portability</p> <p>One of the most in demand &amp; highest paying programming languages</p> <p>Slogan: write once, work everywhere</p> <p>POPULARITY ★★★★★ USED TO BUILD Gmail, Minecraft, Most Android Apps, Enterprise applications</p> <p>AVG. SALARY \$102,000</p>	<p><b>C</b> <i>One Ring</i></p> <p>DIFFICULTY ★★★★★</p>  <p>The power of C is known to them all</p> <p>Everyone wants to get its Power</p> <p>Lingua franca of programming language</p> <p>One of the oldest and most widely used language in the world</p> <p>Popular language for system and hardware programming</p> <p>A subset of C++ except the little details</p> <p>POPULARITY ★★★★★ USED TO BUILD Operating systems and hardware</p> <p>AVG. SALARY \$102,000</p>	<p><b>C++</b> <i>Saruman</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Everyone thinks that he is the good guy</p> <p>But once you get to know him, you will realize he wants the power, not good deeds</p> <p>Complex version of C with a lot more features</p> <p>Widely used for developing games, industrial and performance-critical applications</p> <p>Learning C++ is like learning how to manufacture, assemble, and drive a car</p> <p>Recommended only if you have a mentor to guide you</p> <p>POPULARITY ★★★★★ USED TO BUILD Operating systems, hardware, and browsers</p> <p>AVG. SALARY \$104,000</p>	<p><b>JavaScript</b> <i>Hobbit</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Frequently underestimated (powerful)</p> <p>Well-known for the slow, gentle life of the Shire (web browsers)</p> <p>"Java and Javascript are similar like Car and Carpet are similar" - Greg Hewgill</p> <p>Most popular clients-side web scripting language</p> <p>A must learn for front-end web developer (HTML and CSS as well)</p> <p>One of the hottest programming language now, due to its increasing popularity as server-side language (node.js)</p> <p>POPULARITY ★★★★★ USED TO BUILD Paypal, front-end of majority websites</p> <p>AVG. SALARY \$99,000</p>	<p><b>C#</b> <i>Elf</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Beautiful creature (language), used to stay in their land, Rivendell (Microsoft Platform), but recently started to open up to their neighbours (open source)</p> <p>A popular choice for enterprise to create websites and Windows application using .NET framework</p> <p>Can be used to build website with ASP.NET, a web framework from Microsoft</p> <p>Similar to Java in basic syntax and some features</p> <p>POPULARITY ★★★★★ USED TO BUILD Enterprise and Windows applications</p> <p>AVG. SALARY \$94,000</p>	<p><b>Ruby</b> <i>Man (Middle Earth)</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Very emotional creature</p> <p>They (some Ruby developers) feel they are superior &amp; need to rule the Middle Earth</p> <p>Mostly known for its popular web framework, Ruby on Rails</p> <p>Focuses on getting things done</p> <p>Designed for fun and productive coding</p> <p>Best for fun and personal projects, startups, and rapid development</p> <p>POPULARITY ★★★★★ USED TO BUILD Hulu, Groupon, Slideshare</p> <p>AVG. SALARY \$107,000</p>	<p><b>PHP</b> <i>Orc</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Ugly guy (language) and doesn't respect the rules (inconsistent and unpredictable)</p> <p>Big headache to those (developers) to manage them (codes)</p> <p>Yet still dominates the Middle-earth (most popular web scripting language)</p> <p>Suitable for building small and simple sites within a short time frame</p> <p>Supported by almost every web hosting services with lower price</p> <p>POPULARITY ★★★★★ USED TO BUILD Wordpress, Wikipedia, Flickr</p> <p>AVG. SALARY \$89,000</p>	<p><b>Objective-C</b> <i>Smaug</i></p> <p>DIFFICULTY ★★★★★</p>  <p>Lonely and loves gold</p> <p>Primary language used by Apple for Mac OS X &amp; iOS</p> <p>Choose this if you want to focus on developing iOS or OS X apps only</p> <p>Consider to learn Swift (newly introduced by Apple in 2014) as your next language</p> <p>POPULARITY ★★★★★ USED TO BUILD Most iOS Apps and part of Mac OS X</p> <p>AVG. SALARY \$107,000</p>
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## 파이썬의 범용성과 쉬운 문법

- 1 모든 걸 할 수 있는(General-purpose) 프로그래밍 언어
- 2 미국 Top10 컴퓨터공학과들의 80%는 컴퓨터언어 입문강좌로 C가 아닌 파이썬을 채택
- 3 구글 드롭박스 넷플릭스 등 수많은 기업들은 파이썬을 현업에서 사용 중



Source: r4stats.com

개략적으로 설명드리면 R은 통계학자들을 위해 만들어진 언어인만큼 통계 처리에 강점이 있습니다.  
반면 Python은 범용성이 크기 때문에 데이터 수집·분석 뿐 아니라 업무 자동화나 웹 구축도 가능합니다.

온라인 채널에서 물건을 판매하는 경우를 가정해보겠습니다.

판매자는 제품을 제작하고, 고객에게 배송하고, 사용 후기를 받고, 새로운 제품을 개발하는 일을 합니다.

R은 위 과정 중에서 제품을 고객에게 배송하는 역할만 할 수 있습니다.

나머지 작업을 위해 판매자는 다른 사람을 고용해야 합니다.

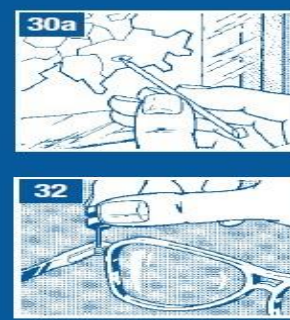
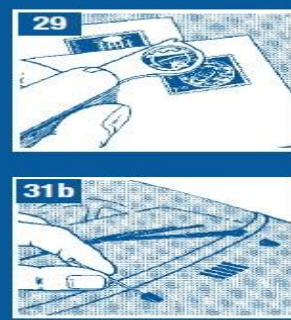
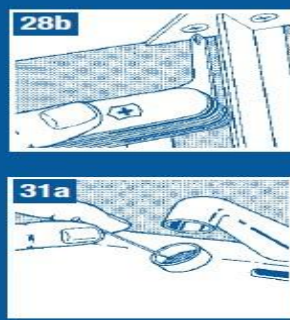
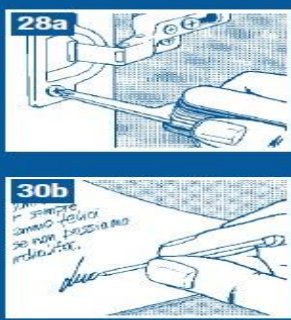
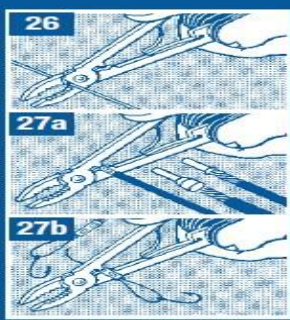
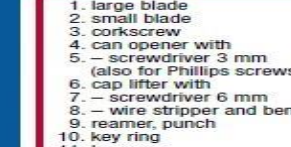
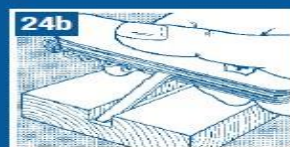
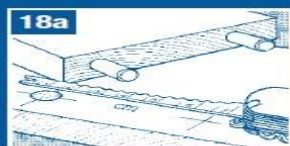
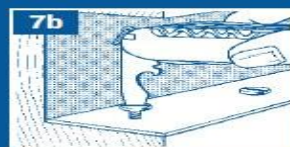
반면 Python은 제품을 제작하고, 배송하고, 후기를 받고, 새로운 제품을 개발하는 등 모든 일을 할 수 있습니다.



## Swiss Army Knife







# 1.6795 SwissChamp Tools and features

1. large blade
2. small blade
3. corkscrew
4. can opener with
5. — screwdriver 3 mm (also for Phillips screws)
6. cap lifter with
7. — screwdriver 6 mm
8. — wire stripper and bender
9. reamer, punch
10. key ring
11. tweezers
12. toothpick
13. scissors
14. multi-purpose hook
15. wood saw
16. fish scaler with
17. — hook disgorger
18. — ruler (cm + inches)
19. nailfile with
20. — metal file
21. nail cleaner
22. — metal saw
23. screwdriver 2.5 mm
24. chisel and scraper
25. pliers with
26. — wire cutters
27. — wire crimping tool
28. Phillips screwdriver (size approx. 1–2)
29. magnifying glass (approx. 8 times)
30. ballpoint pen
31. pin (stainless steel)
32. mini-screwdriver 1.5 mm (pat.) (to be screwed onto corkscrew 3)
33. sewing eye

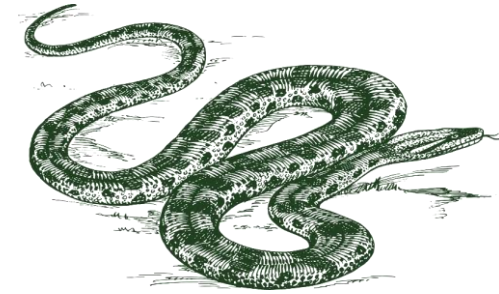
the 12 standard features



주요 도구를 알아 보자

# Anaconda Distribution

The World's Most Popular Python/R Data Science Platform



## Data Scientists

Connect to a range of sources, collaborate with other users, and deploy projects with the single click of a button

[Learn More >](#)



## IT Professionals

Safely scale and deploy from individual laptops to collaborative teams, from a single server to thousands of nodes

[Learn More >](#)



## Business Leaders

Harness the power of data science, machine learning, and AI at the pace demanded by today's digital interactions

[Learn More >](#)

여행용 세트 왜 사시나요?





# 아나콘다

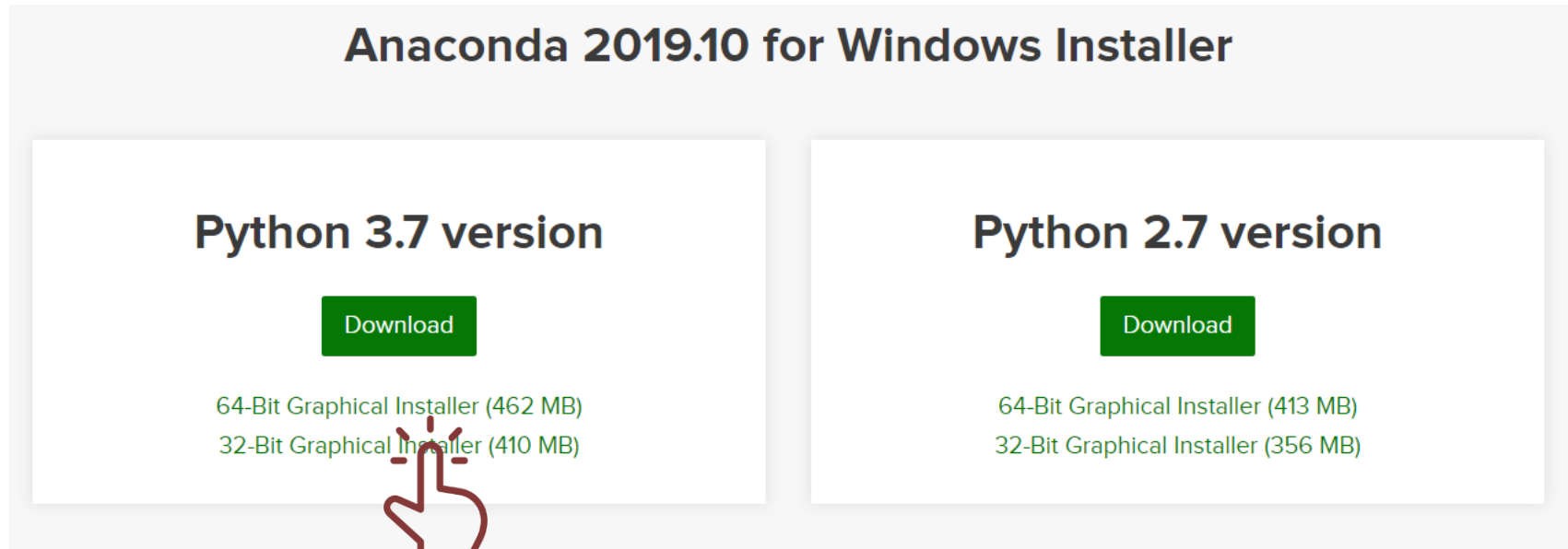
처음에 이해 가지 않는다  
사용하면서 이해할 수 밖에 없음

- 1 데이터 과학 수많은 패키지 포함  
"하나씩 설치할 필요가 없다"
- 2 패키지 의존성 문제 해결  
"버전에 따라 활용이 달라질 수 있음"
- 3 인터랙티브한 화면 제공  
"데이터 과학자들의 IDE(통합개발환경),  
웹처럼 코드, 문서, 이미지를 한 화면에 볼 수도 있음"



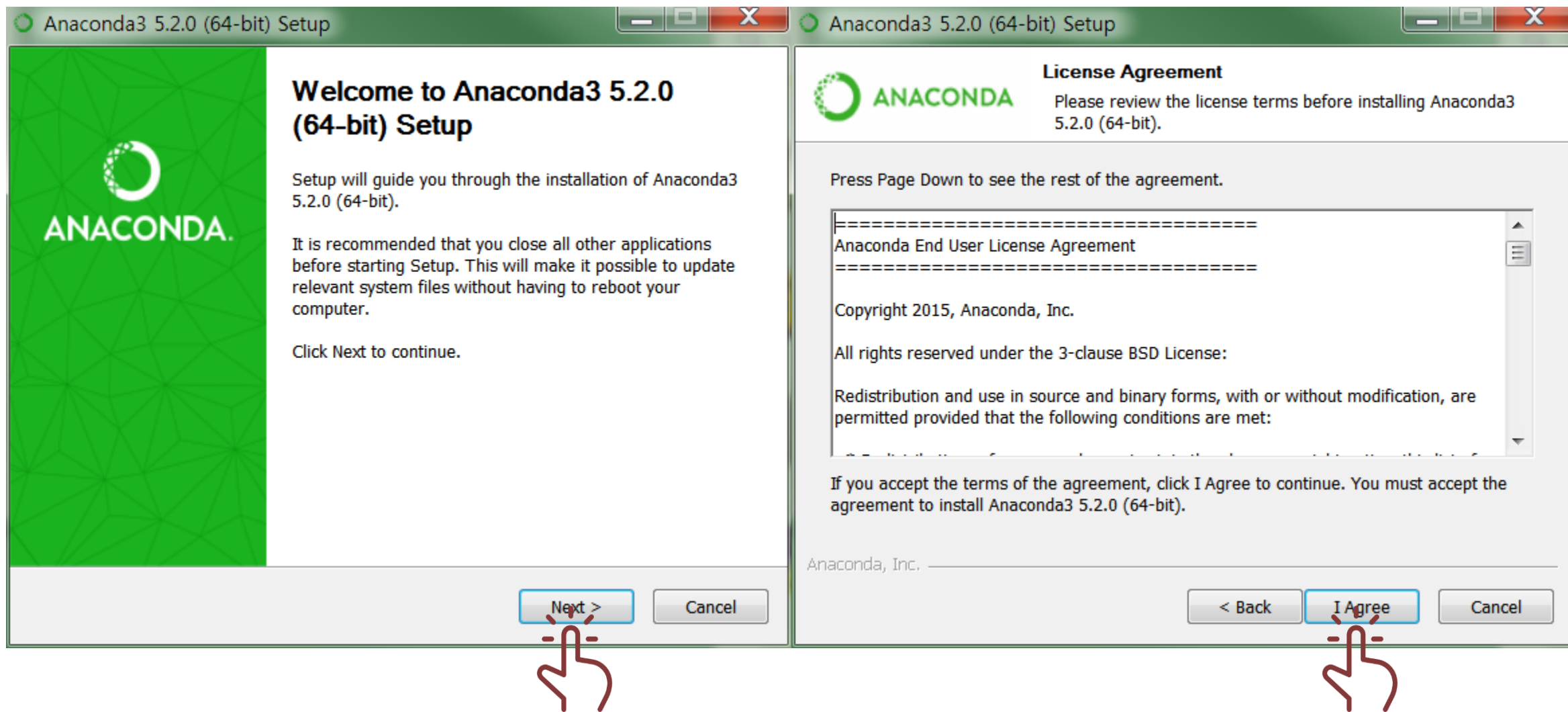
# 아나콘다 설치방법

막 Next누르시면 다시 설치하셔야 해요!!!!

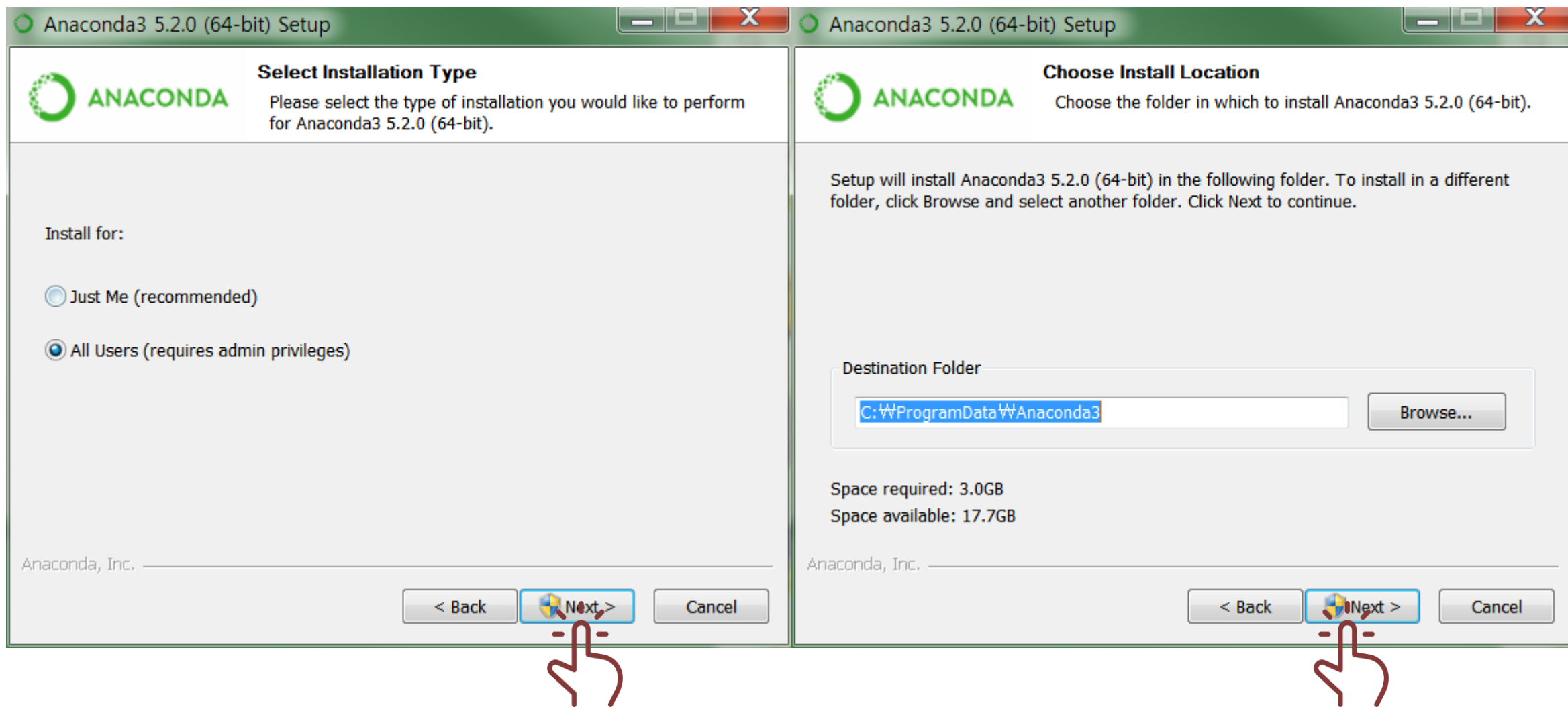


<https://www.anaconda.com/download/> 접속해 본인의 운영체제에 맞게 다운로드 한다  
\*비트확인: WINDOW키 + Pause키

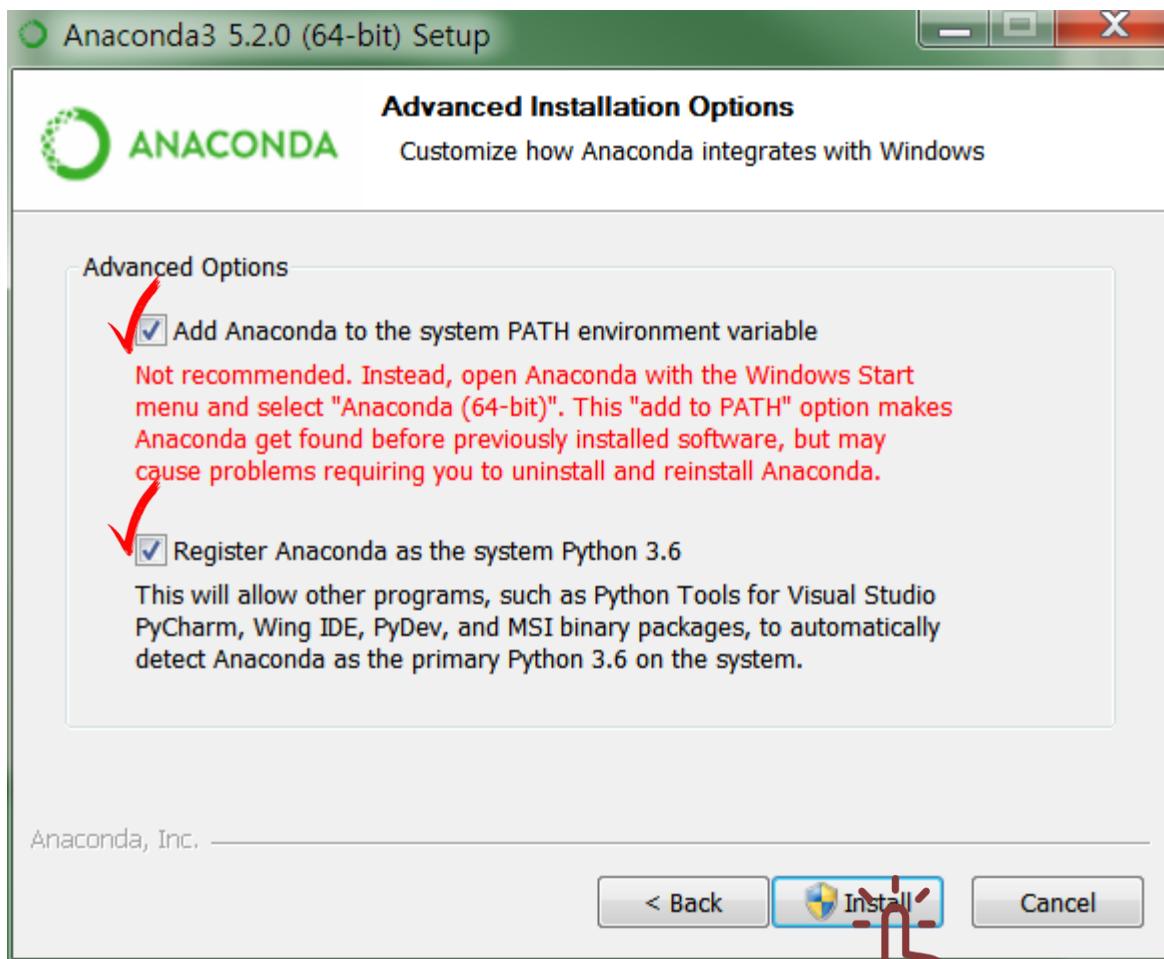
# 아나콘다 설치방법



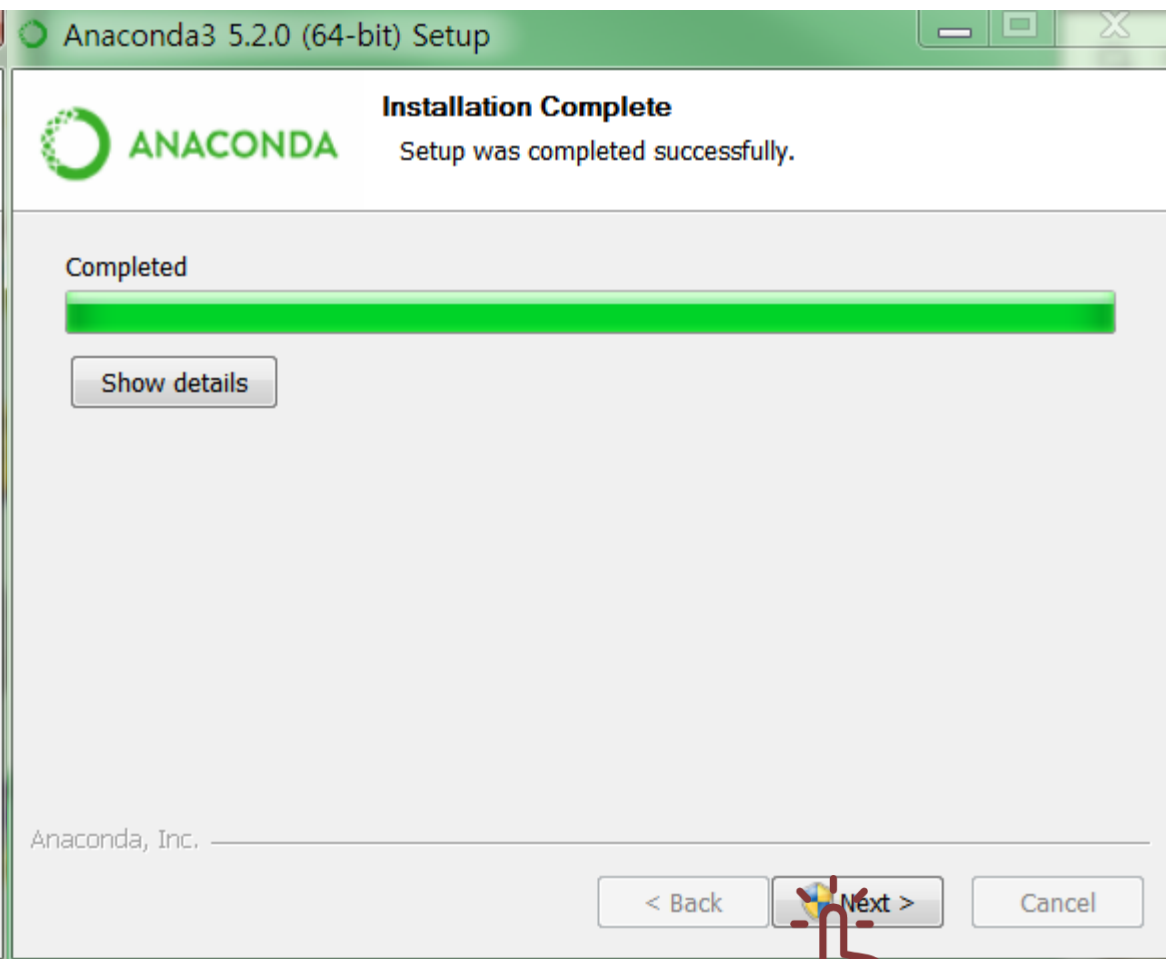
# 아나콘다 설치방법



# 아나콘다 설치방법



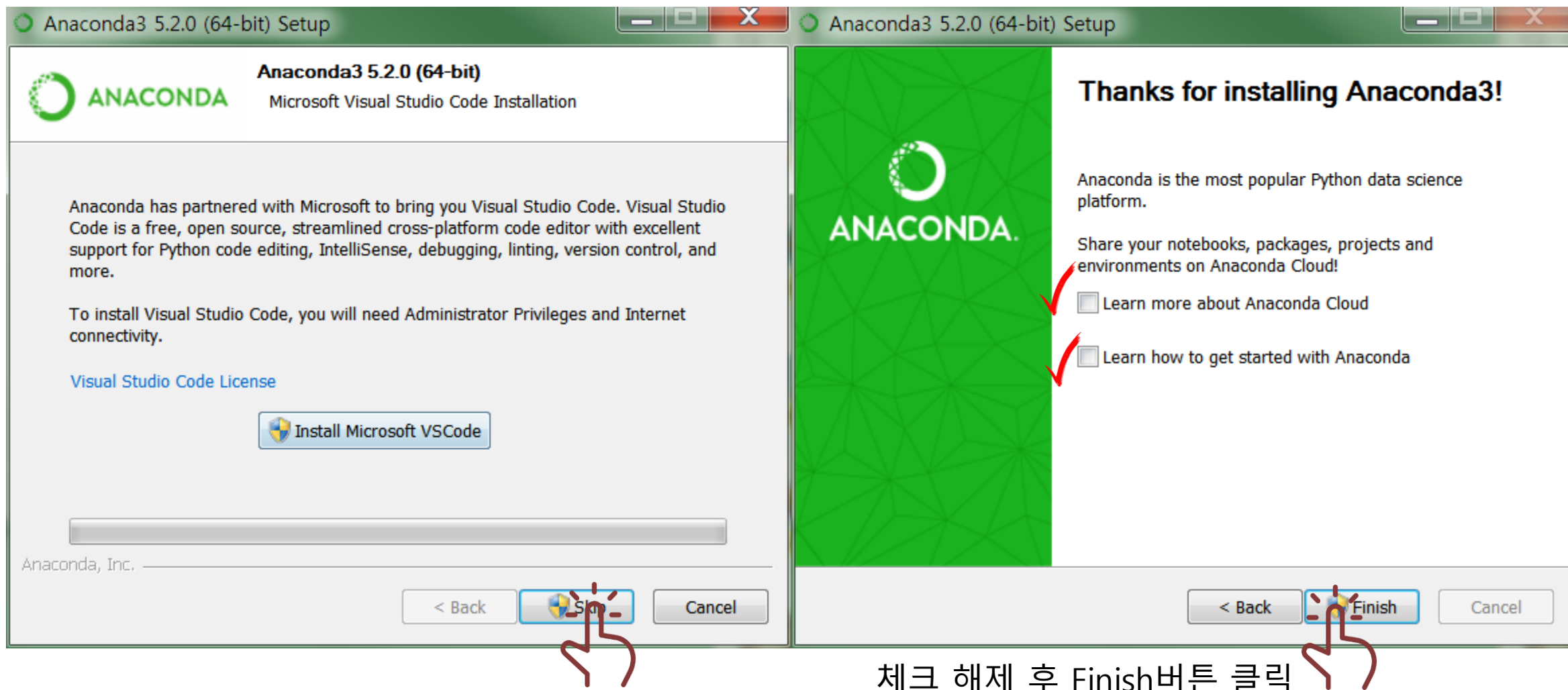
둘다 체크 해줍니다.



10분 정도 소요

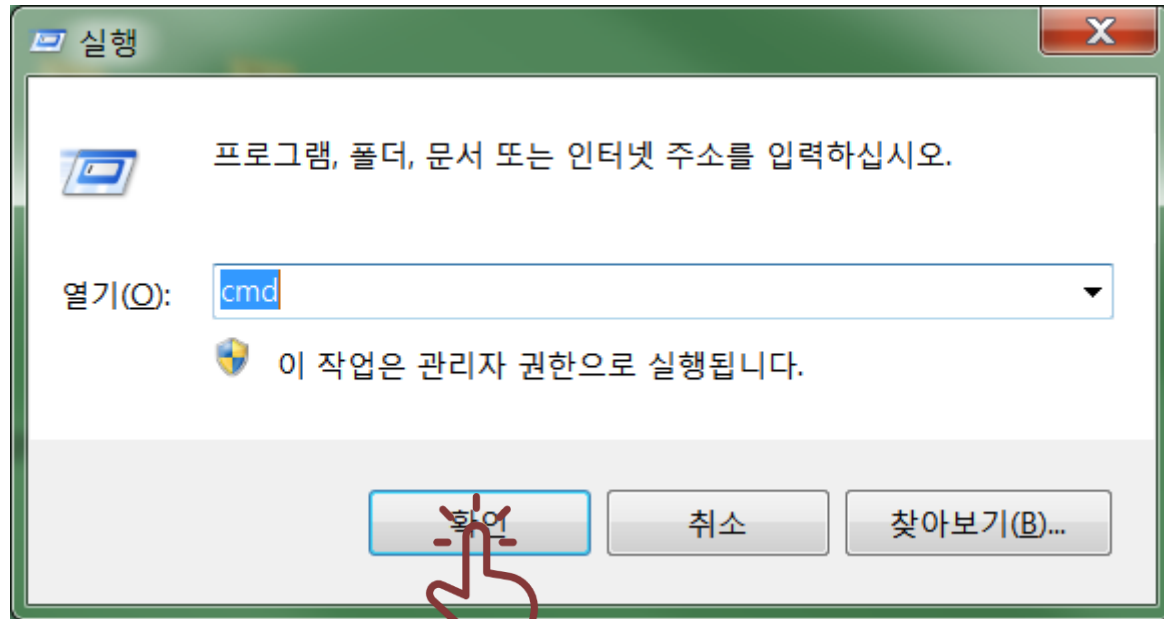


# 아나콘다 설치방법

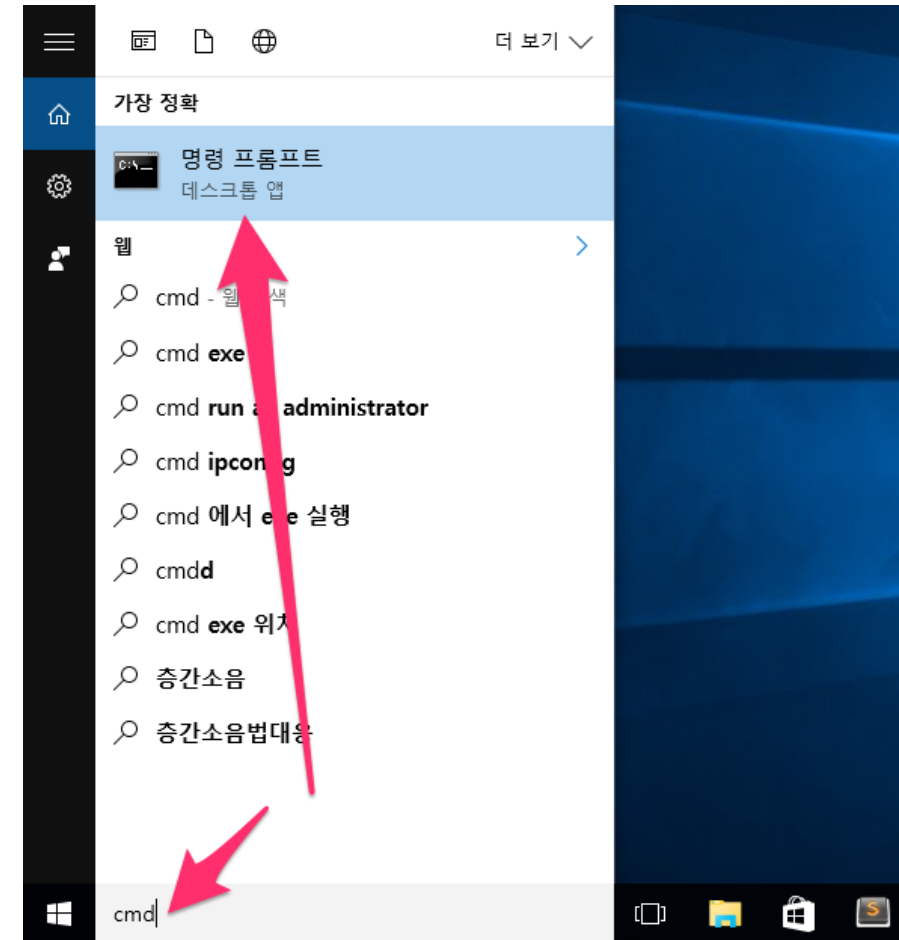


체크 해제 후 Finish버튼 클릭

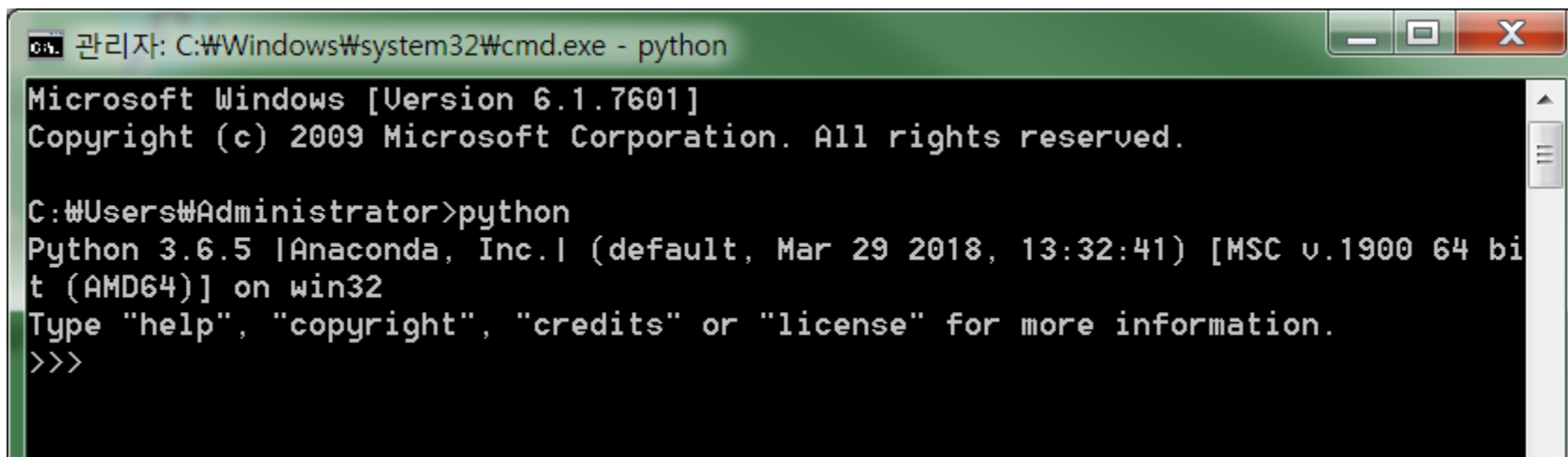
# 아나콘다 설치확인



실행창 열기(Window키 + R) → cmd 입력 → 확인



# 아나콘다 설치확인



```
관리자: C:\Windows\system32\cmd.exe - python
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>python
Python 3.6.5 |Anaconda, Inc.| (default, Mar 29 2018, 13:32:41) [MSC v.1900 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>>
```

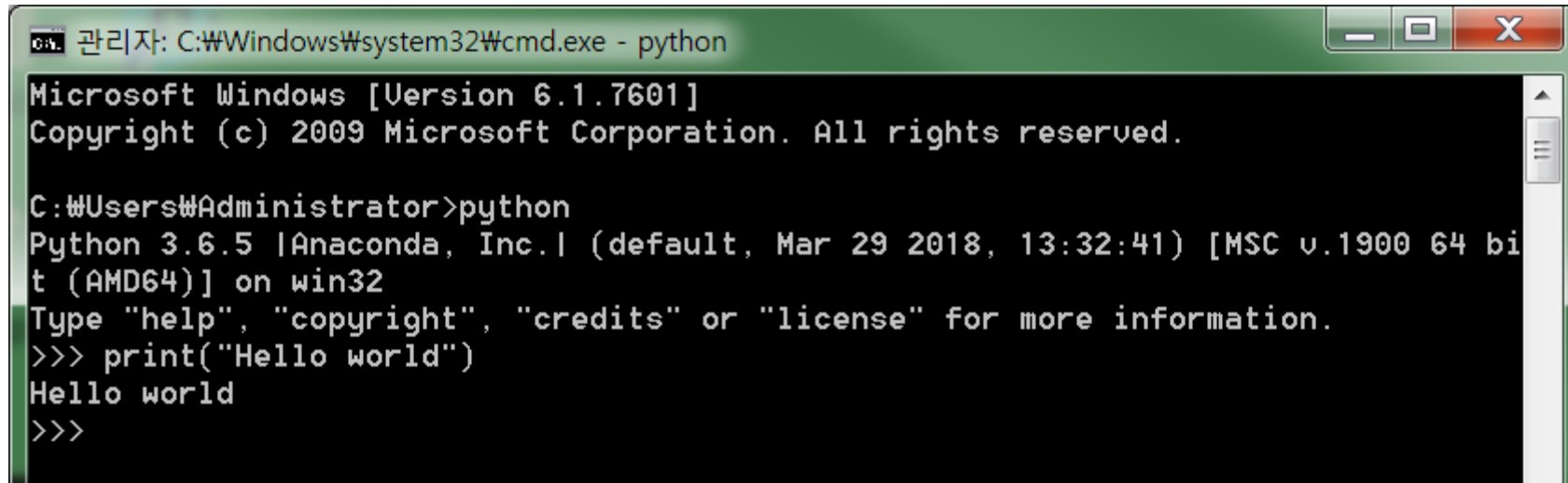
python 을 타이핑해보자!

→ python 3.7 버전이 잘 설치되었음을 확인

화살표 모양 3개 파이썬 터미널에 접속했다.

→ 파이썬을 사용할 것이다.

# Hello world 출력하기!

A screenshot of a Windows command prompt window. The title bar reads '관리자: C:\Windows\system32\cmd.exe - python'. The window content shows the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>python
Python 3.6.5 |Anaconda, Inc.| (default, Mar 29 2018, 13:32:41) [MSC v.1900 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello world")
Hello world
>>>
```

`print("Hello world")` 입력 → Hello world가 출력됨을 볼 수 있다.

“컴퓨터에 여러분이 명령을 내린 것입니다!!!”

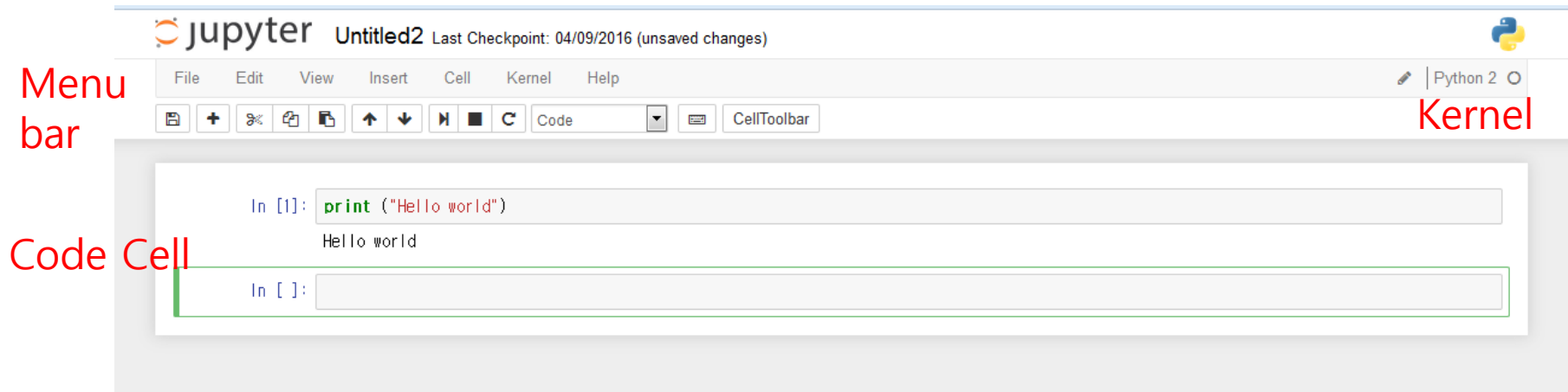


“데이터 과학자들의 IDE(통합개발환경),  
웹처럼 코드, 문서, 이미지를 한 화면에 볼 수도 있음”

- Coding 한 결과를 실시간으로 확인이 가능
- 자동완성 기능
- 다양한 언어를 지원
- Markdown를 지원하여 문서화 가능
- Web 접근이 가능하면 접속 가능



# 주피터 맛보기



- Ctrl + Enter : 현재 Cell 실행
- Shift + Enter : 아래의 Cell를 선택하고 Cell 실행
- Alt + Enter : Cell 실행하고 아래에 새 Cell 추가
- Command Mode ( cell에서 esc 누르면 모드 전환)
  - y : code cell로 전환 / m: Markdown cell
  - a : 현재 Cell 이전에 새로운 Cell 만들기 / b : 현재 Cell 다음에 새로운 Cell 만들기
  - dd : 현재 cell 삭제
  - | : 라인번호 보이기

# 주피터 맛보기

## Jupyter notebook

### 구경하기

어서오세요 주피터 노트북에 오신 걸 환영합니다.

In [1]: `print("hello")`

hello

In [14]: `from IPython.display import Image`  
`Image(url="https://www.google.co.kr/images/branding/googlelogo/1x/googlelogo_color_272x92dp.png", width=200, height=100)`

Out[14]:



In [18]: `from IPython.display import YouTubeVideo`  
`YouTubeVideo('IgCr0Px6pns')`

Out[18]:



배우는 마음가짐

## 배우는 마음가짐\_1



음료를 찾으러  
매장 전체를  
뒤지지 않는 다.

# 배우는 마음가짐\_1

## 130 Shortcuts for Microsoft Windows

F1	Display Help
Ctrl + C (or Ctrl + Insert)	Copy the selected item
Ctrl + X	Cut the selected item
Ctrl + V (or Shift + Insert)	Paste the selected item
Ctrl + Z	Undo an action
Ctrl + Y	Redo an action
Delete (or Ctrl + D)	Delete the selected item and move it to the Recycle Bin
Shift + Delete	Delete the selected item without moving it to the Recycle Bin first
F2	Rename the selected item
Ctrl + Right Arrow	Move the cursor to the beginning of the next word
Ctrl + Left Arrow	Move the cursor to the beginning of the previous word
Ctrl + Down Arrow	Move the cursor to the beginning of the next paragraph
Ctrl + Up Arrow	Move the cursor to the beginning of the previous paragraph
Ctrl + Shift with an arrow key	Select a block of text

윈도우의  
모든 단축키를  
쓰지는 않는다.





영어 공부한다고  
브리티니?  
백과사전을 다 외우  
지 않는다.

## 배우는 마음가짐\_1



# ~~파이썬 다 배울거야!~~

(1년을 꼬박 투자해도 못배운다)

★ **파이썬의 인덱스**를  
배운다고 생각해야함  
오류의 해결법은 **구글**에 있다.

## 배우는 마음가짐\_2



첫 손에 배부르랴

## 배우는 마음가짐\_2



언제나 문법은 지겹다

하지만 걸음마 없이 뛰는 사람은 없다.

한 걸음 한 걸음 나아가 보도록 합시다.

**준비는 끝!**

**파이썬을 배워봅시다**